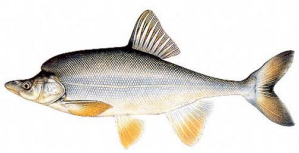
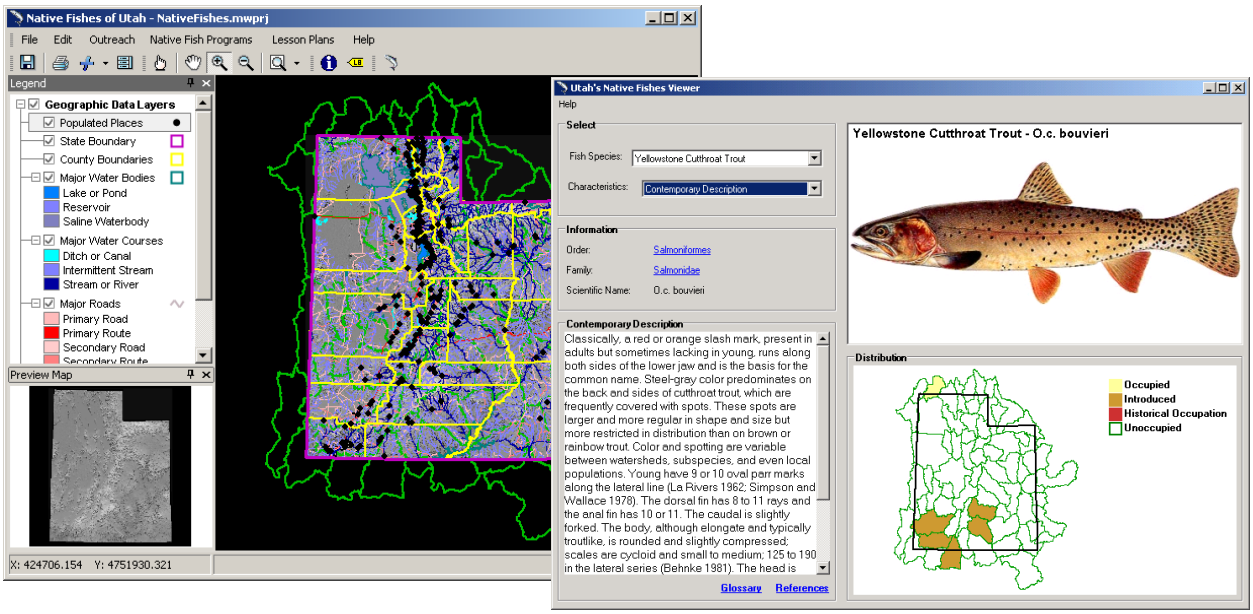
Utah's Native Fishes Viewer



User's Manual


Native Fishes of Utah - NativeFishes.mwprj
File Edit Outreach Native Fish Programs Lesson Plans Help
Legend
Geographic Data Layers
Populated Places
State Boundary
County Boundaries
Major Water Bodies
Lake or Pond
Reservoir
Saline Waterbody
Major Water Courses
Ditch or Canal
Intermittent Stream
Stream or River
Major Roads
Primary Road
Primary Route
Secondary Road
Preview Map
X: 424706.154 Y: 4751930.321
Utah's Native Fishes Viewer
Help
Select
Fish Species: Yellowstone Cutthroat Trout
Characteristics: Contemporary Description
Information
Order: Salmoniformes
Family: Salmonidae
Scientific Name: O.c. bouvieri
Contemporary Description
Classically, a red or orange slash mark, present in adults but sometimes lacking in young, runs along both sides of the lower jaw and is the basis for the common name. Steel-gray color predominates on the back and sides of cutthroat trout, which are frequently covered with spots. These spots are larger and more regular in shape and size but more restricted in distribution than on brown or rainbow trout. Color and spotting are variable between watersheds, subspecies, and even local populations. Young have 9 or 10 oval parr marks along the lateral line (La Rivers 1962; Simpson and Wallace 1978). The dorsal fin has 8 to 11 rays and the anal fin has 10 or 11. The caudal is slightly forked. The body, although elongate and typically troutlike, is rounded and slightly compressed; scales are cycloid and small to medium; 125 to 190 in the lateral series (Behnke 1981). The head is
Glossary References
Yellowstone Cutthroat Trout - O.c. bouvieri
Distribution
Occupied
Introduced
Historical Occupation
Unoccupied

http://water.usu.edu/utahfish/

INSE
Institute for Natural Systems Engineering

EMRG
Environmental Management Research Group

Utah Water Research Laboratory

Utah Museum of Natural History
University of Utah

5-18-2004

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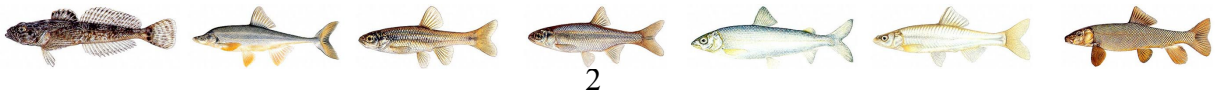
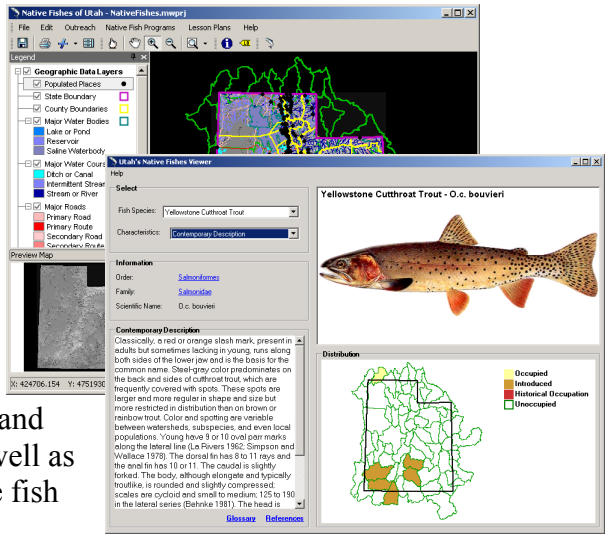


Utah's Native Fishes Viewer User's Manual

1.0 INTRODUCTION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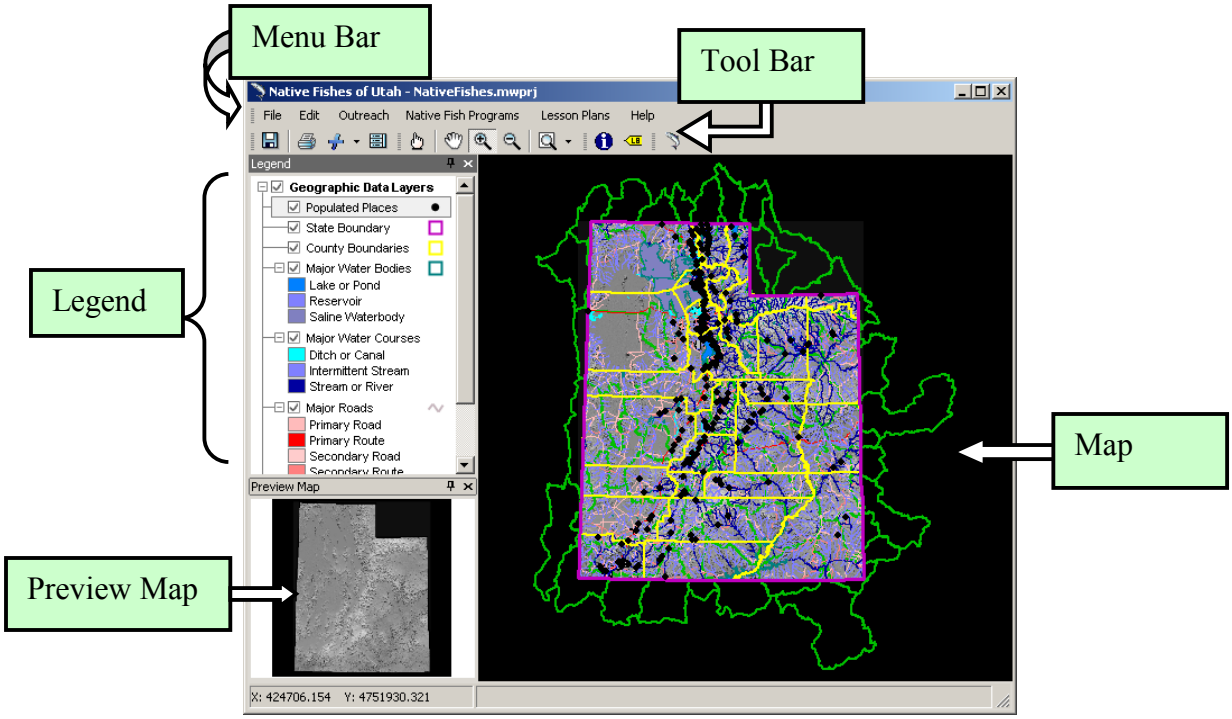
Glossary References
Yellowstone Cutthroat Trout - O.c. bouvieri
Distribution
Occupied
Introduced
Historical Occupation
Unoccupied

The Native Fishes Viewer software program is a geographic information system (GIS)-based program that provides visualization and analysis of information about Utah's native fish species. It was produced at the Utah Water Research Laboratory at Utah State University by the Institute for Natural Systems Engineering and the Environmental Management Research Group. The Utah Museum of Natural History was also a collaborator in the production of the software. The software includes an interactive map and legend, including typical GIS application functions, as well as a plug-in for visualizing information about Utah's native fish species.

2.0 OVERVIEW OF THE NATIVE FISHES VIEWER MAP INTERFACE

2.1 OPENING THE NATIVE FISHES VIEWER MAP INTERFACE

The installation of your Native Fishes Viewer program should have placed a shortcut in the Windows **Start** Menu. To open the Native Fishes Viewer program, click the **Start** menu (lower left corner of screen) and from the **Programs** menu select the Native Fishes Viewer program. The Native Fishes Viewer window will open. The window contains three frames: (1) the Legend, (2) the Preview map, and (3) the Map. It also contains a Menu bar and a Tool bar. The following figure may help you understand the Native Fishes Viewer Interface.



2.2 PARTS OF THE NATIVE FISHES VIEWER MAP INTERFACE

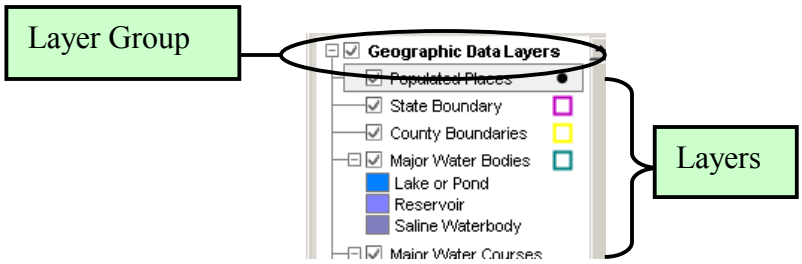
The following sections describe each of the major pieces of the Native Fished Viewer.

2.2.1 Map

The map is a view in which you can view roads, rivers, water bodies, cities, county boundaries, terrain, and other spatial data.

2.2.2 Legend

The legend displays *layer groups*, each of which consist of one or more *layers*. A layer is a coverage of spatially located points, lines or polygons that represent geographical information or site locations. Each layer may have attribute data associated with it; for example, a river reach layer may contain attribute information regarding the length, average flow, elevation, and reach geometry for each feature. Each layer in the legend can be displayed in the Map view.

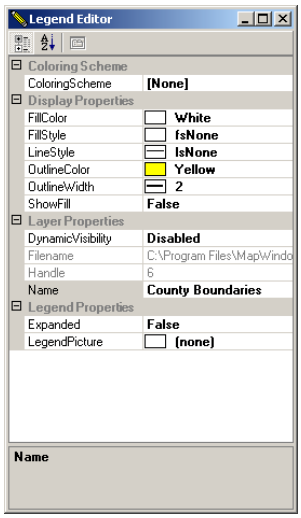


In the legend, you can turn ‘on’ and/or ‘activate’ layers. A layer is ‘on’ if it has a check mark in its corresponding box. A layer is ‘active’ if it has a box surrounding it and is gray.

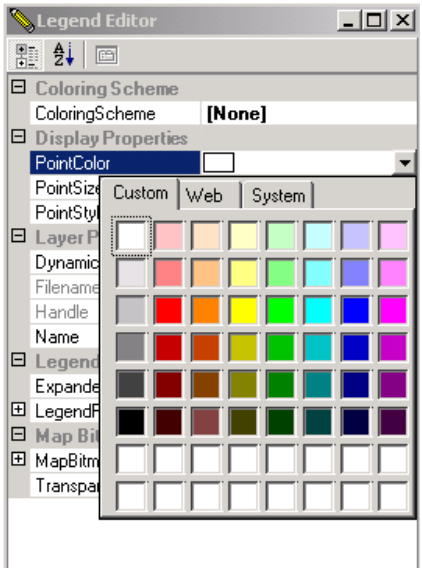
You can turn an entire group of layers ‘on’ by checking the box beside the layer group name. Similarly, you can turn an entire group of layers ‘off’ by un-checking the box beside the layer group name. If you want to display some layers in a layer group, but not others, you can turn ‘on’ and ‘off’ individual layers within each layer group. To check or un-check a layer, simply click in its corresponding box. When a layer is checked, it is displayed in the map.

2.2.3 Legend Editor

The Legend Editor is a tool that allows you to change the way a layer is displayed. To open the Legend Editor, **double click** on the layer of interest in the legend. The following form will open:



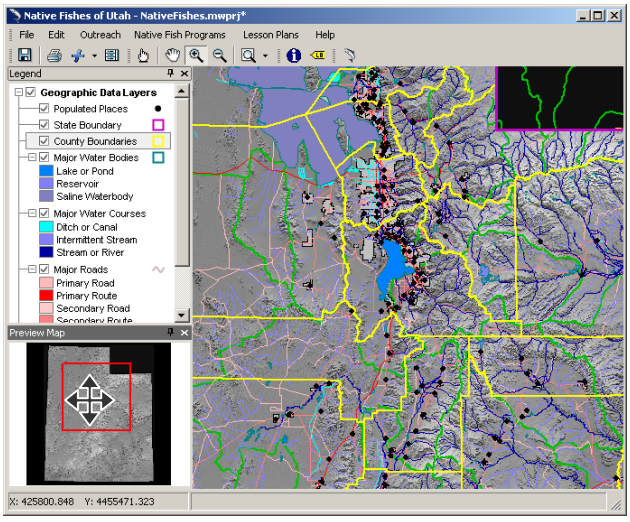
The Legend Editor contains several sections: Coloring Scheme, Display Properties, Layer Properties, and Legend Properties. Each section has a list of one or more properties. To change a property, click on its corresponding box at the right. A pull-down menu or dialogue box will become available that will allow you to make changes:



You can collapse a section by clicking its corresponding minus sign box, , at the extreme left of the form. You can expand a section by clicking on the corresponding plus sign box, .

2.2.4 Preview Map

The Preview Map is designed to provide an indication of the current zoom area in relationship to the maximum extents of the Map. The red rectangle shows the current zoom extents of the Map view. It also allows you to easily change the extents of the Map view. To change the current extents via the Preview Map, click in the center of the red rectangle in the Preview Map and drag it to the desired position. Your Map view will automatically zoom to the updated extents:



2.2.5 Select Feature Tool

The select feature tool is used to select one or more features of the active layer. To use this tool, click on the Select Feature button, . To select one or more features, either point and click with your mouse (hold down the SHIFT key to select more than one feature), or draw a box surrounding the features. The feature(s) will turn yellow when selected. To unselect features, make a different theme active by clicking on its name in the legend.

2.2.6 Zoom Tools

The tool bar contains several zooming tools. The following zoom buttons are available:

The Pan button allows you to drag your view in any direction without changing the scale of the map.

To zoom to a smaller area, click the Zoom In button, and then click on the map. The Map scale will be adjusted and the view will be centered at the point on which you clicked. In addition, you may click and drag a rectangle on the map and the map will be zoomed to the selected rectangle.

To zoom to a broader area, click the Zoom Out button, and then click on the map. The scale will be adjusted and the view will be centered at the point on which you clicked.

If you click this button, a list of options will become available:

The following explains the options in the above list:

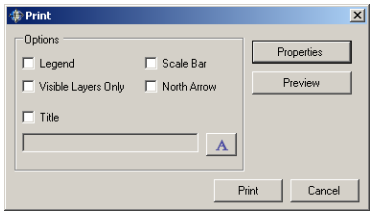
- Zoom to **Previous** changes the Map view extents to those of the previous zoom extents.

- Zoom to **Next** changes the Map view extents to those of the next view (only available if you have clicked Previous)
- Zoom to **Max Extents** changes the Map view extents so that you can view each layer in your project completely (it doesn't matter if the layers are 'on')
- Zoom to **Layer** zooms to the extents of the active layer
- Zoom to **Selected** zooms to the selected feature(s) of the active layer
- Zoom to **Shape** allows you to select a shape index from the active layer to which to zoom

2.2.7 Native Fishes Viewer Menus

The Native Fishes Viewer Map Interface has several menus on the Menu Bar. The following is a description of the functionality included in each of the menus.

File The file menu contains two options. The first option is Print. Print allows you to sent the current view in the map to a printer. When you click on Print, the following print options form will appear:



You can specify which options to include in the layout of the print by clicking on the check boxes next to each of the options. You can also add a title to print by clicking on the title check box and then typing your title in the text field below it. You can preview your print before sending it to the printer by clicking on the Preview button. Finally, you can choose a printer and set its properties by clicking on the Properties button.

The File menu also includes an Exit option that, when clicked, closes the Native Fishes Viewer software.

Edit The edit menu contains two options, Copy View and Copy Legend. Each of these options copies either the map view or the map view's legend to the clipboard. The contents of the clipboard can then be pasted into a word processor such as Microsoft Word or other Windows applications.

Outreach The outreach menu contains information on outreach and educational opportunities. Clicking on an item in the Outreach menu will open a new window containing the requested information.

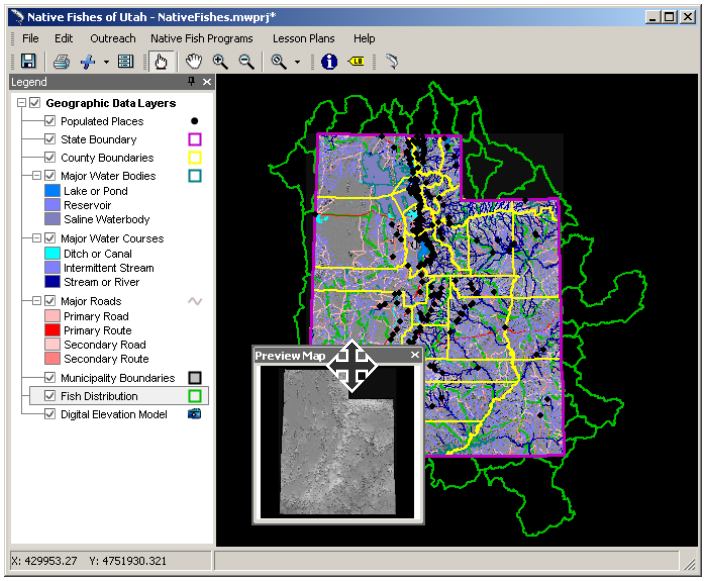
Native Fish Programs The Native Fish Programs menu contains information on native fish programs implemented by various agencies in the State of Utah. Clicking on an item in the Native Fish Programs menu will open a new window containing the requested information.

Lesson Plans The Lesson Plans menu contains the educational lessons that have been developed using the Native Fishes Viewer software. Lesson plans can be accessed by clicking on the appropriate link under the Lesson Plans menu.

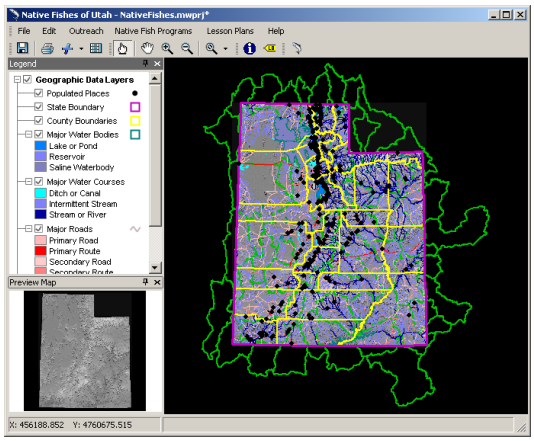
Help The Help Menu contains two options. The first option, Help Contents, launches this help file. The second option provides information about the development of the Native Fishes Viewer Software. These options can be accessed by clicking on them in the Help Menu.

2.3 CUSTOMIZING THE NATIVE FISHES VIEWER MAP INTERFACE

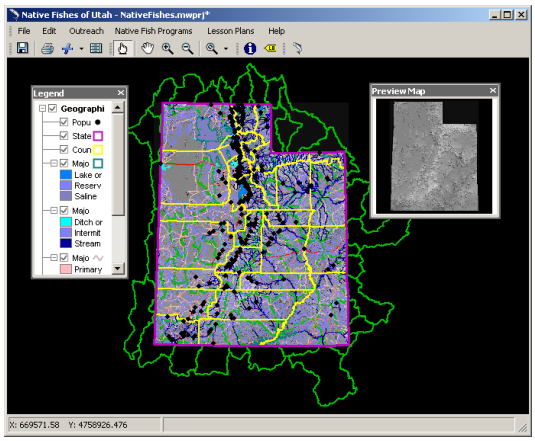
You can customize the Native Fishes Viewer interface to meet your preferences by moving and/or resizing the Legend and the Preview Map. To **move** a frame, click on the title bar (make sure the pointer changes to crossbars) and drag the frame to a new location:



You can change your view layout to either *docked* or *floating*. The view is docked when each frame is separate (no overlapping). The view is floating when one or more frames 'float' above another frame or frames:

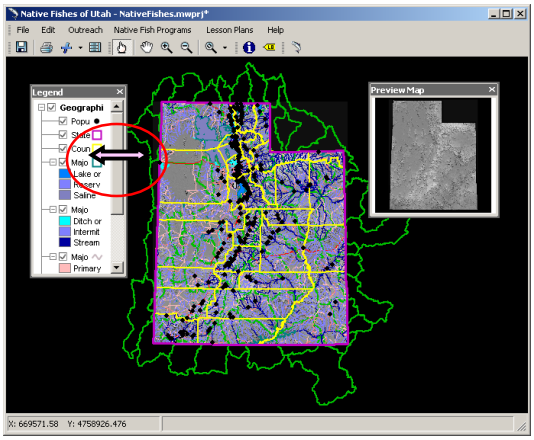


Docked Frames


Native Fishes of Utah - NativeFishes.mwprj*
File Edit Outreach Native Fish Programs Lesson Plans Help
Legend
Preview Map

Floating Frames

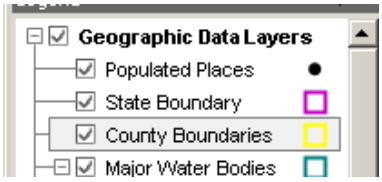
To **resize** a frame, move your mouse pointer to an edge of the frame and then click and drag the boundary until the frame is the desired size.


Native Fishes of Utah - NativeFishes.mwprj*
File Edit Outreach Native Fish Programs Lesson Plans Help
Legend
Preview Map

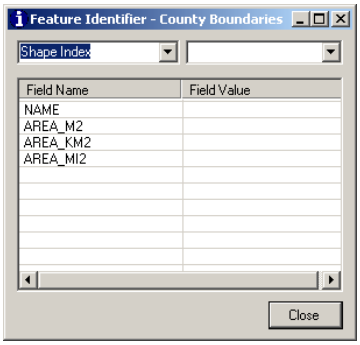
3.0 FEATURE IDENTIFIER AND SHAPE LABELER PLUG-IN

3.1 FEATURE IDENTIFIER

The Feature Identifier tool allows you to click on a feature in the selected layer and view attribute information for the given feature. To use the Feature Identifier tool, first you must turn 'on' and activate the layer for which you would like information (recall that a theme is 'active' when it is gray and a box surrounds it and 'on' when it is checked). In the following example, the County Boundaries layer is turned 'on' and is the active theme.



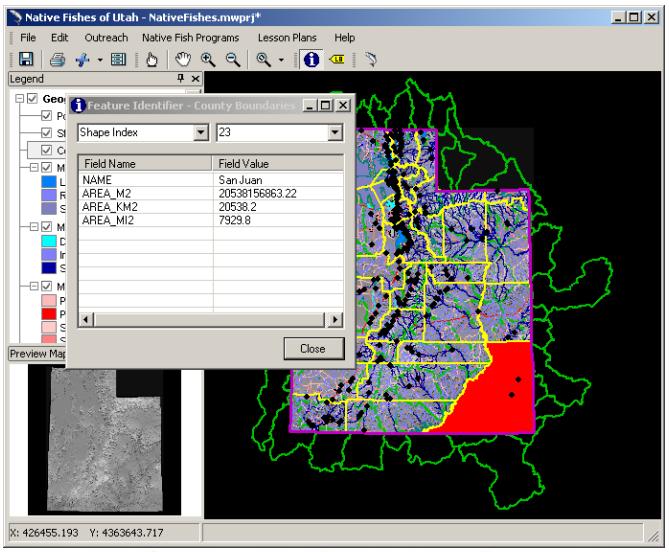
After you have activated a layer, click the Feature Identifier button, . The Feature Identifier window will open. This window contains a table with two columns: Field Name and Field Value. The items listed in "Field Name" correspond with the field names in the active layer's underlying attribute table. For the example above, the Feature Identifier table would look like the following:



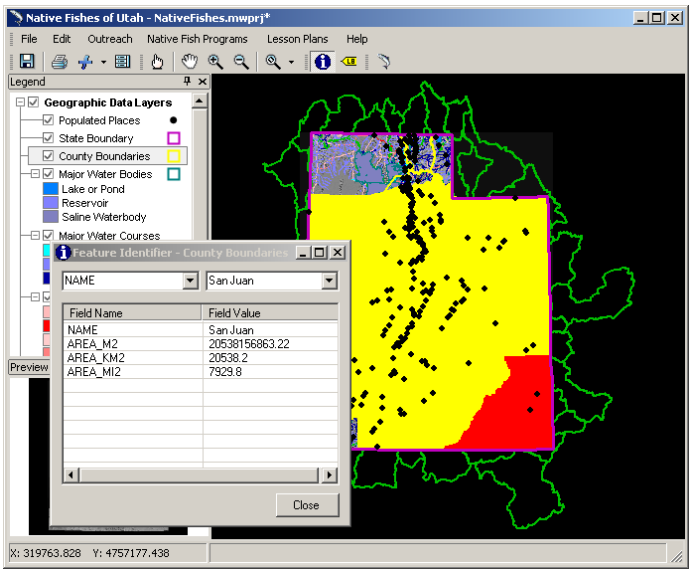
The values in the Field Value column will remain blank until you click on a feature of the selected layer in the Map view.

> **Note:** When the MapWindow WIS is in the Feature Identify mode, the cursor will appear as an "i" with cross bars in the upper left corner: $^{+}\mathbf{i}$

After you have clicked the Feature Identifier button, you can select a feature by either: (1) clicking on a point, line, polygon, etc. after positioning the crossbars of the cursor directly over the feature, or (2) clicking and drawing a box surrounding the feature or surrounding part of the feature(s). The selected feature will turn red, and the Feature Identifier table will become populated with data that corresponds to the feature you selected:

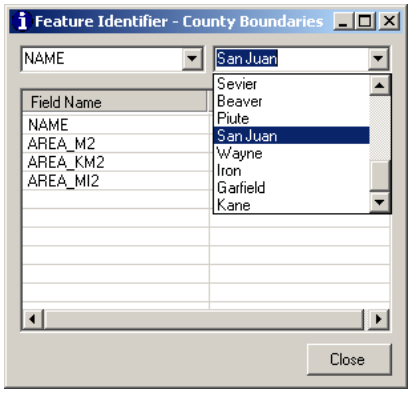


In the example above, we clicked on a feature in the map and then viewed its attribute information in the Feature Identifier window. This tool can also locate features on a map based on user-defined specifications. The user can activate a layer, click the Feature Identifier tool, and then select several features of the layer:



When more than one feature is selected with the Feature Identifier tool, only one feature's attributes will appear in the Feature Identifier table. The feature that appears in the table will be red in the Map View. The other selected features will be yellow.

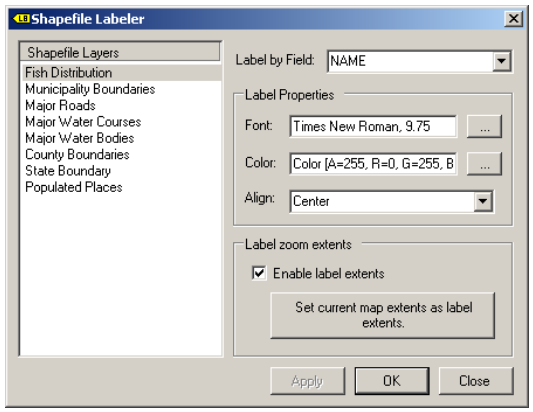
The Feature Identifier table includes two fields at the top of the window in which you can perform queries on the selected features. In the left box, you can select an attribute. In the right, you can select a corresponding attribute value. In this case, the selected attribute is the county name and the selected attribute value is "San Juan."



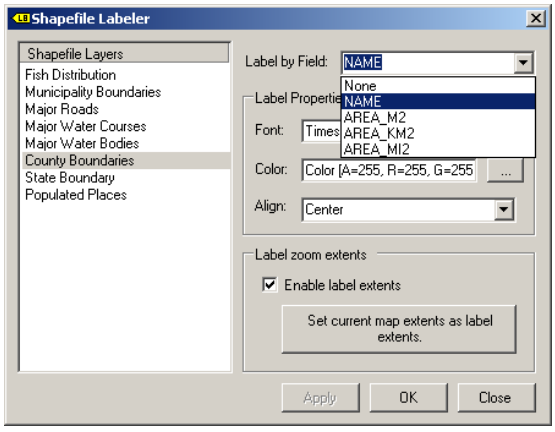
3.2 SHAPE LABELER

IMPORTANT NOTE: Custom labels have already been implemented for some of the themes in the Native Fishes Viewer. If you change the labeling scheme of the Native Fishes Viewer it will be saved and displayed as you have changed it the next time you open the software.

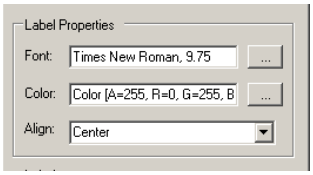
The Shape Labeler allows you to add customized labels to the Map view. To open the tool, click the Shape Labeler button, . The following window will open:



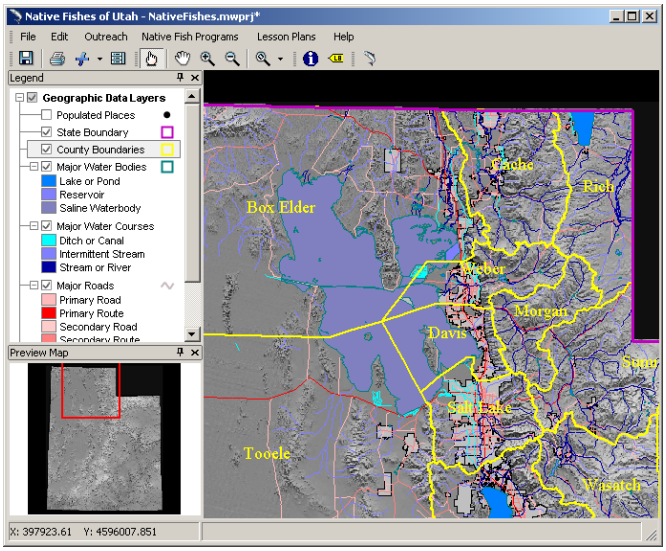
In the Shapefile Layers list, select the layer for which you would like to add labels. The "Label by Field" menu will become populated with the layer's corresponding attributes:



After you select an attribute by which the layer will be labeled (county name for example), you can customize the labels' appearance by changing the text font, color, and alignment using the Label Properties fields:

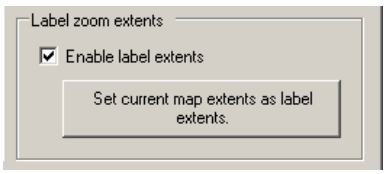


To apply your labels to the Map view, click **Apply**:



The labels will appear in the Map view whenever the corresponding layer is turned on in the legend. To remove a layer's labels, click the Shape Labeler button, select the corresponding layer in the "Shapefile Labeler" list, and select **None** in the "Label by Field" list.

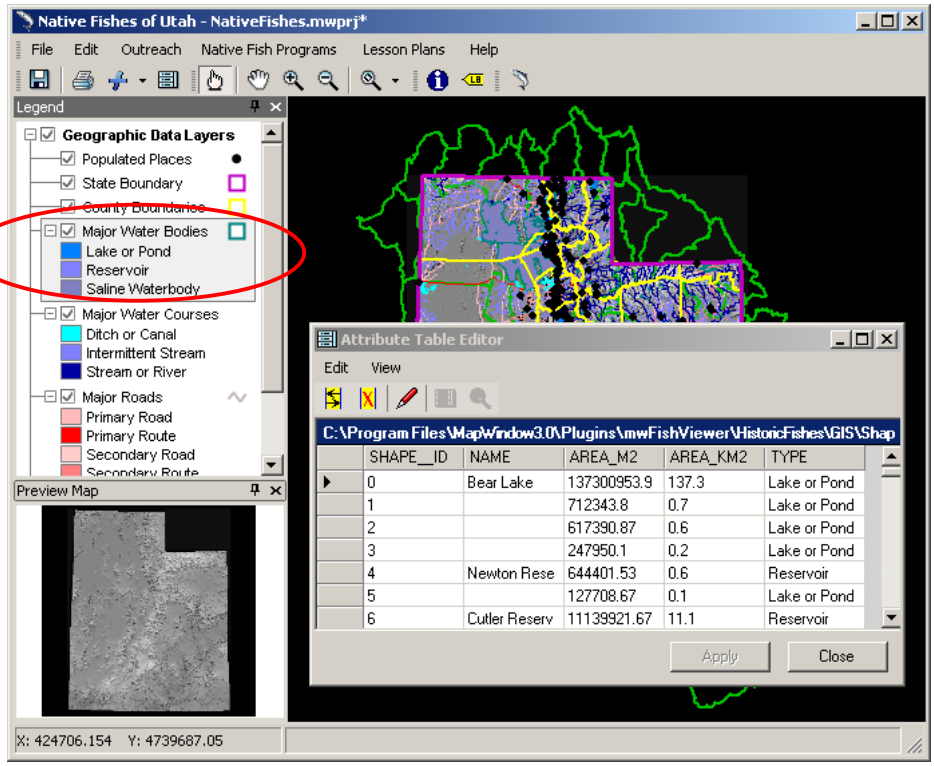
The Label Zoom Extents option allows you to set a map zoom level at which the labels will turn on. This is useful when labels on the map get too cluttered to read. You can set the label extents such that the labels do not turn on until you zoom in to a certain level on the map. To do this, click the Enable Label Extents check box. This will activate the label zoom extents option. Next, using the Zoom Tools, zoom the Map View to the desired zoom level at which you wish your labels to appear and then click on the Set Current Map Extents as Label Extents button. This option can be disabled by simply un-checking on the Enable Label Extents check box.



4.0 ATTRIBUTE TABLE EDITOR PLUGIN

The Attribute Table Editor Plug-in allows you to view and edit the attribute data associated with the data layers in the Map view. To view the attribute table associated with one of the layers,

first make the desired layer active and then click on the Attribute Table Editor Plug-in icon on the toolbar, . This will open the attribute table for the active theme.



The columns in the table can be resized to show their contents by hovering over the line between two columns until the resize cursor appears and then clicking and dragging the column to its desired width. Clicking the field name at the top of the table sorts the field ascending or descending.

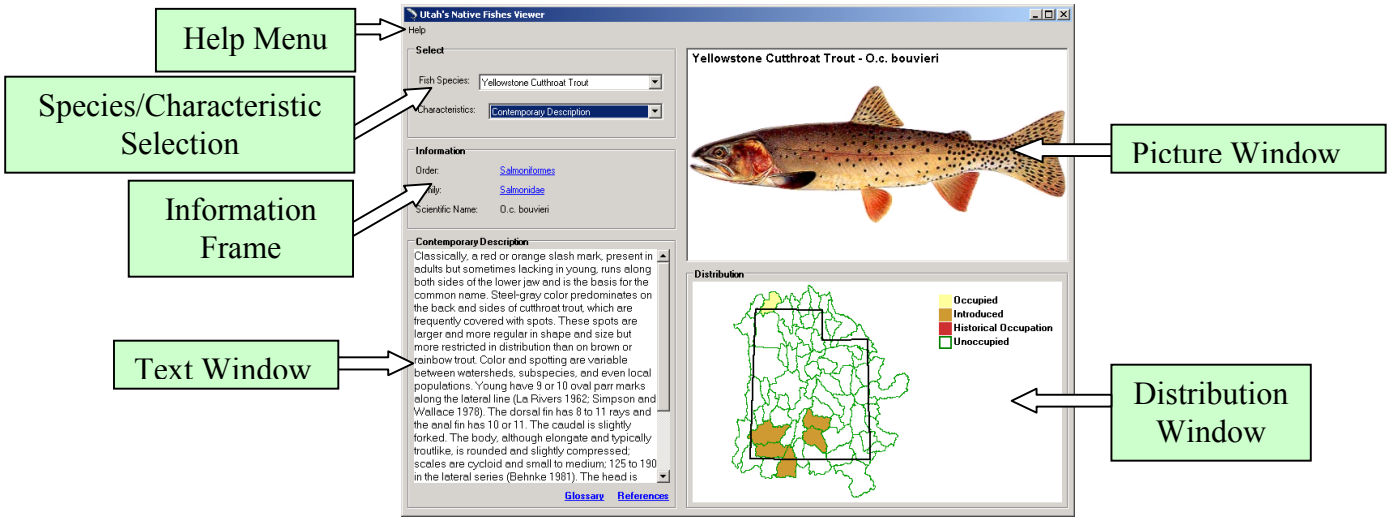
5.0 NATIVE FISHES VIEWER PLUG-IN

The Native Fishes Viewer plug-in allows you to view and query information about Utah's native fish species. The technical and descriptive information contained in the Native Fishes Viewer Plug-in was reproduced from the following source:

> William F. Sigler and John W. Sigler. Fishes of Utah: A Natural History. Illustrations by Joseph R. Tomelleri. Salt Lake City: The University of Utah Press, 1996. Permission to reproduce courtesy the University of Utah Press.

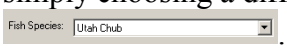
The color fish images contained in the software were created by Joseph R. Tomelleri, and he has granted permission for their use in this software.

This plug-in is launched by clicking on the Native Fishes Viewer button on the toolbar, . When the toolbar button is clicked, the following form will appear. In the figure below, the different parts of the form are labeled for reference.


Help Menu
Species/Characteristic Selection
Information Frame
Text Window
Picture Window
Distribution Window
Utah's Native Fishes Viewer
Help
Select
Fish Species:
Yellowstone Cutthroat Trout
Characteristics:
Contemporary Description
Information
Order:
Salmoniformes
Family:
Salmonidae
Scientific Name:
O.c. bouvieri
Contemporary Description
Classically, a red or orange slash mark, present in adults but sometimes lacking in young, runs along both sides of the lower jaw and is the basis for the common name. Steel-gray color predominates on the back and sides of cutthroat trout, which are frequently covered with spots. These spots are larger and more regular in shape and size but more restricted in distribution than on brown or rainbow trout. Color and spotting are variable between watersheds, subspecies, and even local populations. Young have 9 or 10 oval parr marks along the lateral line (La Rivers 1962; Simpson and Wallace 1978). The dorsal fin has 8 to 11 rays and the anal fin has 10 or 11. The caudal is slightly forked. The body, although elongate and typically troutlike, is rounded and slightly compressed; scales are cycloid and small to medium; 125 to 190 in the lateral series (Behnke 1981). The head is
Glossary
References
Yellowstone Cutthroat Trout - O.c. bouvieri
Distribution
Occupied
Introduced
Historical Occupation
Unoccupied

5.1 PARTS OF THE NATIVE FISHES VIEWER PLUG-IN

5.1.1 Species/Characteristic Selection

The Native Fishes Viewer plug-in presents information about the fish species that is selected in the Fish Species pull down menu. Information for different fish species can be accessed by simply choosing a different species from the Fish Species pull down menu, 

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Characteristics of each native fish species are shown in the Text Window. The Characteristics pull down menu controls which text is shown in the Text Window. When a new characteristic is selected, the text in the text window will be updated to reflect the change. Each of the different

characteristics can be accessed by choosing them from the Characteristics pull down menu,

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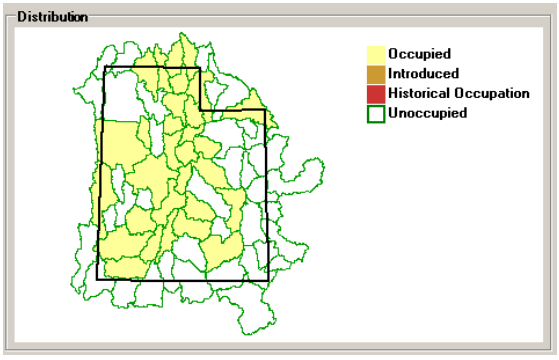
5.1.2 Picture Window

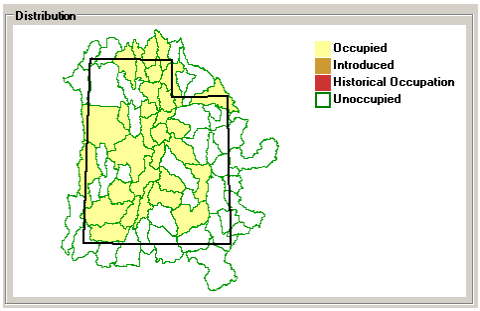
The Picture Window shows a picture of the fish species that is selected in the Fish Species pull down menu. Each time a new species is selected, the Picture Window is updated with a picture of the newly selected species and the common and scientific name of the newly selected species. These pictures can be copied to the clipboard by right clicking on the picture and then selecting Copy. Once copied, the pictures can be pasted into most Windows software programs such as Microsoft Word, Microsoft Paint, etc. The fish images contained in the Native Fishes Viewer software were provided by Joseph R. Tomelleri.

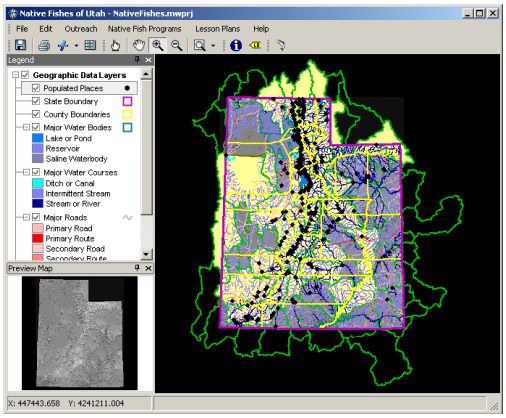
5.1.3 Distribution Window

The Distribution Window shows the geographic distribution of the fish species that is selected in the Fish Species pull down menu. Each time a new species selection is made, the Distribution Window is updated with the geographic distribution of the newly selected fish species. A legend is included in the Distribution Window to denote the different types of occupation.



When the Native Fishes Viewer plug-in is open, the map display in the main map interface will mimic the display in the Distribution Window. You can click back and forth between the two forms if you want to more closely examine the distribution of the selected fish species (i.e., if you want to zoom in, zoom out, pan, etc.).

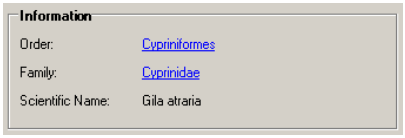




Once the Native Fishes Viewer plug-in is closed, the main map interface will reset, and will no longer show the distribution of the selected fish species.

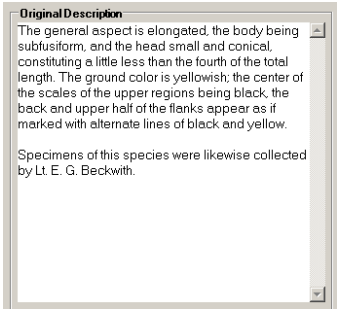
5.1.4 Information Frame

The Information Frame presents the order, family, and scientific name of the selected fish species. The Information Frame is automatically updated each time a new fish species is selected. You can click on the order or family name to get a text description of the order or family to which the selected fish species belongs.



5.1.5 Text Window

Characteristics of each native fish species are shown in the Text Window. The characteristic text shown in the Text Window reflects both the selected fish species in the Fish Species pull down menu and the selected characteristic in the Characteristics pull down menu. The text in the Text Window changes each time a new species or characteristic is selected from the pull down menus.


Original Description
The general aspect is elongated, the body being subfusiform, and the head small and conical, constituting a little less than the fourth of the total length. The ground color is yellowish; the center of the scales of the upper regions being black, the back and upper half of the flanks appear as if marked with alternate lines of black and yellow.
Specimens of this species were likewise collected by Lt. E. G. Beckwith.

5.1.6 Help Menu

The Help Menu contains three items. The first is a glossary of terms used in the fish species characteristic descriptions. The second is a list of references. These references are cited throughout the text of the fish species characteristic descriptions and are provided for information purposes. The last item in the Help Menu is a document describing the Native Fishes Viewer plug-in, including appropriate credits for the text information, the pictures of the fish species, and those who have created this software. Each of these items can be accessed by clicking on them in the Help Menu.

NOTE: The glossary and reference list can also be accessed by clicking on the links directly below the Text Window.